

REMARKS

Claims 1-44 are pending in the above-captioned patent application after this amendment. Claims 1-31 have been rejected. The drawings have been objected to as containing certain informalities. Accordingly, Figures 1, 2, 4, 5, 7C and 8 have been amended to overcome the formal and substantive grounds of objection.

The Applicant respectfully disagrees with and traverses the rejection of claims 1-31. However, the Applicant has amended claims 1, 6, 11, 16, 20 and 27, and added new claims 32-44 with this amendment for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000) and/or to clarify what the Applicant regards as the present invention. The Applicant further notes that claim 27 has been amended with this amendment to clarify what the Applicant regards as the present invention and not to get around the stated rejection of the Examiner.

Support for the amendments to claims 1, 6, 11, 16, 20 and 27 can be found throughout the originally filed specification. In particular, support for the amendments to claims 1, 11, 20 and 27 can be found in the specification at page 16, lines 8-12, at page 17, lines 4-31, and in Figures 1, 2 and 6A.

Support for new claims 32-44 can be found throughout the originally filed specification. In particular, support for new claims 32-44 can be found in the specification at page 13, line 31 through page 14, line 16, at page 15, lines 1-28, at page 16, lines 8-30, at page 17, line 4 through page 18, line 21, in Figures 1, 2, 6A and 6AA, and in originally filed claims 1-31.

No new matter is believed to have been added by this amendment.

Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Objections to the Drawings

The Examiner has objected to the drawings on the basis of certain informalities. More particularly, the drawings are objected to as "failing to comply with 37 CFR 1.84(p)(4) because reference characters '26' and '28' have both been used to designate a device

(reticle)." The Examiner further provides that "(t)here are numerous more instances of this occurring with different reference characters throughout the figures."

The Applicant respectfully disagrees with the objection to the drawings. However, red-lined drawings in response to the Examiner's objection are submitted herewith. In particular, on Figure 1, reference numerals "28" and "127" were deleted to eliminate multiple reference characters being used to designate a common element. Additionally, on Figure 2, reference numeral "28" was deleted on two occasions to eliminate multiple reference characters being used to designate a common element. Further, on Figure 4, reference numeral "28" was deleted on two occasions to eliminate multiple reference characters being used to designate a common element. Still further, on Figure 5, reference numeral "28" was deleted on two occasions to eliminate multiple reference characters being used to designate a common element. Figure 7C has been amended to remove the reference numeral "77". Yet further, on Figure 8, reference numerals "10", "28", "139" and "153" were deleted to eliminate multiple reference characters being used to designate a common element.

Formal drawings are also submitted herewith.

Rejections Under 35 U.S.C. §103(a)

Claims 1-31 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,260,580 issued to Itoh et al. (hereinafter "Itoh et al."). The Applicant has amended claims 1, 11, 20 and 27 with this amendment. Claim 27 has been amended to clarify what the Applicant regards as the present invention and not to overcome the stated rejection of the Examiner. Accordingly, the Applicant respectfully submits that amended claims 1, 11 and 20 are patentable over Itoh et al. Further, the Applicant respectfully disagrees with and traverses the rejection of claim 27 under 35 U.S.C. §103(a) and respectfully submits that claim 27 is patentable over the cited reference.

The Examiner provides that "(r)egarding claims 1, 11, 20, and 27, Itoh et al. teach a stage assembly and a method of making a stage assembly that moves a device an X stroke along an X axis and along a Y axis (col. 8, lines 3-13) comprising a guide base (1), a stage that retains the device (2), a Y mover that moves the stage along the Y axis,

including a reaction and moving component (4 and 7), one of which uses a magnet (43_1 and 43_2 or 73_1 and 73_2) that extend along the X axis (col. 3, lines 10-28 and col. 5, line 15- col. 6, line 29 and Fig. 2)."

The Examiner further contends that "Itoh et al. do not explicitly teach the use of a conductor, but they do teach the use of an electric circuit for supplying electric current to the drive coils (41 and 71) (col. 5, lines 21-26, and Fig. 2). The examiner concludes that these coils will act as conductors because of the application of current. Further, Fig. 2 depicts a magnet length that is sufficiently long so that the magnet interacts with the conductor over the length of the X stroke. Fig. 2 also depicts a conductor length that is sufficiently long so that the conductor interacts with the magnet over the range of the X stroke." The Examiner further provides that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the current driven coils for a conductor because the application of current will apply conductive properties to the coils, thus making them conductive, and functionally equivalent to a conductor."

The Examiner further asserts that "(r)egarding claims 2-8, 2-17, 21-24, and 28-29, Itoh et al. depict the conductor remaining within the magnetic field throughout the entire X stroke (Fig. 2), and any slight modification of the lengths or placement of the magnet and conductor is considered obvious in light of the prior art. They also teach the exposure apparatus including the stage assembly (col. 3, lines 16-26). Regarding claims 9-10, 18-19, 25-26, and 30-31, Itoh et al. teach an object manufactured with the exposure apparatus and a wafer on which an image has been formed (col. 3, line 64 – col. 4, line 12)."

The Applicant provides that Itoh et al. is directed to a movable stage device with a movable stage 2 that is moved in the X-axis direction by an X-axis direction linear motor 4_x and a pair of second X-axis direction linear motors 7_{x1} and 7_{x2} and in the Y-axis direction by a Y-axis direction linear motor 4_y and a pair of second Y-axis direction linear motors 7_{y1} and 7_{y2} . The second X-axis direction linear motors 7_{x1} and 7_{x2} and the second Y-axis direction linear motors 7_{y1} and 7_{y2} are used for speed control, which requires a large thrust, and the X-axis direction linear motor 4_x and the Y-axis direction linear motor 4_y are used for position control, which requires no large thrust. The X-axis direction linear motor 4_x consists of an X-axis direction yoke 42_x , a row of X-axis direction drive coils 41_x fixed in

position in the X-axis direction, and a pair of X-axis direction permanent magnets 43_{x1} and 43_{x2} attached to the X-axis direction yoke 42_x to interact with the row of X-axis direction drive coils 41_x . Similarly, the Y-axis direction linear motor 4_y consists of an Y-axis direction yoke 42_y , a row of Y-axis direction drive coils 41_y fixed in position in the Y-axis direction, and a pair of Y-axis direction permanent magnets 43_{y1} and 43_{y2} attached to the Y-axis direction yoke 42_y to interact with the row of Y-axis direction drive coils 41_y . The X-axis direction yoke 42_x and the Y-axis direction yoke 42_y are provided inside the movable stage 2. (Itoh et al. column 8, lines 3-63, column 9, lines 44-65, and in Figures 6 and 7).

Each of the second X-axis direction linear motors 7_{x1} and 7_{x2} and each of the second Y-axis direction linear motors 7_{y1} and 7_{y2} include a yoke, a group of drive coils arranged in a row along the direction of movement that extend through a hollow section of the yoke, and a pair of permanent magnets that are mounted in the hollow section of the yoke with the group of drive coils therebetween. (Itoh et al. column 4, line 67 through column 5, line 8, column 9, lines 18-35, and in Figures 1, 6 and 7).

However, Itoh et al. does not disclose a Y mover including a magnet and a conductor wherein the magnet length is sufficiently long so that the magnet interacts with the conductor over the range of the X stroke or wherein the conductor length is sufficiently long so that the conductor interacts with the magnet over the range of the X stroke and there is relative movement between the conductor and to the magnet over the range of the X stroke. As the movable stage in Itoh et al. moves along the X-axis over the range of the X stroke, the magnet and the coils of each of the Y-axis direction linear motors move together over the range of the X stroke so that there is no relative movement between the magnet and the corresponding coils with which they interact. Further, Itoh et al. does not disclose a conductor having a conductor length that is at least as long as the combination of the X stroke along the X-axis plus the magnet length or a magnet having a magnet length that is at least as long as the combination of the X stroke along the X-axis plus the conductor length.

In distinction to Itoh et al., claim 1 of the present application requires "(a) stage assembly ... comprising: a guide base; a stage that retains the device; and a Y mover that moves the stage only along the Y axis relative to the guide base, the Y mover including a reaction component and a moving component that is secured to the stage;

wherein one of the components includes a magnet having a magnet length that extends along the X axis and the other component includes a conductor having a conductor length along the X axis, and wherein the conductor length is sufficiently long so that the conductor interacts with the magnet over the range of the X stroke and there is relative movement between the conductor and the magnet along the X axis over the range of the X stroke."

These features are not taught or suggested by Itoh et al. Accordingly, claim 1 is believed to be patentable under 35 U.S.C. §103(a). Because claims 2-10 depend either directly or indirectly upon claim 1, they are also considered to be patentable over Itoh et al.

Additionally, in distinction to Itoh et al., claim 11 of the present application requires "(a) stage assembly ... comprising: a guide base; a stage that retains the device; and a Y mover that moves the stage only along the Y axis relative to the guide base, the Y mover including a reaction component and a moving component that is secured to the stage; wherein one of the components includes a magnet having a magnet length that extends along the X axis and the other component includes a conductor having a conductor length along the X axis, and wherein the conductor length is sufficiently long so that the conductor interacts with the magnet over the range of the X stroke and there is relative movement between the conductor and the magnet along the X axis over the range of the X stroke."

These features are not taught or suggested by Itoh et al. Accordingly, claim 11 is believed to be patentable under 35 U.S.C. §103(a). Because claims 12-19 depend either directly or indirectly upon claim 11, they are also considered to be patentable over Itoh et al.

Further, in distinction to Itoh et al., claim 20 of the present application requires "(a) method for making a stage assembly ... comprising the steps of: providing a stage that retains the device; providing a guide base; and moving the stage only along the Y axis relative to the guide base with a Y mover, the Y mover including a reaction component and a moving component that is secured to the stage; wherein one of the components includes a magnet having a magnet length that extends along the X axis and the other component includes a conductor having a conductor length along the X axis, and

wherein the magnet length is sufficiently long so that the magnet interacts with the conductor over the range of the X stroke and there is relative movement between the conductor and the magnet along the X axis over the range of the X stroke."

These features are not taught or suggested by Itoh et al. Accordingly, claim 20 is believed to be patentable under 35 U.S.C. §103(a). Because claims 21-26 depend either directly or indirectly upon claim 20, they are also considered to be patentable over Itoh et al.

Still further, in distinction to Itoh et al., claim 27 of the present application requires "(a) method for making a stage assembly ... comprising the steps of: providing a stage that retains the device; providing a guide base; and moving the stage only along the Y axis relative to the guide base with a Y mover, the Y mover including a reaction component and a moving component that is secured to the stage; wherein one of the components includes a magnet having a magnet length that extends along the X axis and the other component includes a conductor having a conductor length along the X axis, and wherein the conductor length is at least as long as the combination of the X stroke along the X axis plus the magnet length."

These features are not taught or suggested by Itoh et al. Accordingly, claim 27 is believed to be patentable under 35 U.S.C. §103(a). Because claims 28-31 depend either directly or indirectly upon claim 27, they are also considered to be patentable over Itoh et al.

New Claims

New claims 32-44 have been added by this amendment. New claims 32-44 are of a slightly different scope than the previously pending claims. However, new claims 32-44 are believed to be patentable in view of the cited reference.

New claim 32 depends directly from claim 27 which, as noted above, is believed to be patentable. Therefore, new claim 32 is also believed to be patentable.

In contrast to the cited reference, new independent claim 33 of the present invention requires "(a) stage assembly ... comprising: a guide base; a stage that retains the device; a first mover that moves the stage a first stroke along the first axis relative to the guide base; and a second mover that moves the stage along the second axis

relative to the guide base, the second mover including a reaction component and a moving component that is secured to the stage, wherein one of the components includes a magnet having a magnet length that extends along the first axis and the other component includes a conductor having a conductor length along the first axis, wherein the conductor length is sufficiently long so that the conductor interacts with the magnet over the range of the first stroke and there is relative movement between the conductor and the magnet along the first axis over the range of the first stroke, and wherein the conductor length is at least as long as the combination of the first stroke along the first axis plus the magnet length."

These features are not taught or suggested by the cited reference. Accordingly, new claim 33 is believed to be patentable. Because new claims 34-38 depend either directly or indirectly from new claim 33, they are likewise considered to be patentable.

Additionally, in contrast to the cited reference, new independent claim 39 of the present invention requires "(a) stage assembly ... comprising: a guide base; a stage that retains the device; a first mover that moves the stage a first stroke along the first axis relative to the guide base; and a second mover that moves the stage along the second axis relative to the guide base, the second mover including a reaction component and a moving component that is secured to the stage, wherein one of the components includes a magnet having a magnet length that extends along the first axis and the other component includes a conductor having a conductor length along the first axis, wherein the magnet length is sufficiently long so that the magnet interacts with the conductor over the range of the first stroke and there is relative movement between the conductor and the magnet along the first axis over the range of the first stroke, and wherein the magnet length is at least as long as the combination of the first stroke along the first axis plus the conductor length."

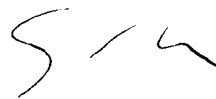
These features are not taught or suggested by the cited reference. Accordingly, new claim 39 is believed to be patentable. Because new claims 40-44 depend either directly or indirectly from new claim 39, they are likewise considered to be patentable.

Conclusion

In conclusion, the Applicant respectfully asserts that claims 1-44 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this the 13th day of June, 2003.

Respectfully submitted,



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